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cont. DNA. Each such allele-specific oligonucleotide would possess a different 3'-terminal nucleotide residue (for example, using the method of Figure 2).

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In the Claims:

Please amend the claims to read as follows:

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1. (Once Amended) A process for detecting a single nucleotide polymorphism (SNP) in a target polynucleotide comprising:

A2 (a) contacting one or more allele specific oligonucleotide primers (P1) with one or more target polynucleotides (TP), wherein said target polynucleotide possesses a first portion that is complementary to a second portion located on said P1 at or near one end thereof but wherein the terminal nucleotide, and third nucleotide from the terminal nucleotide, at said end of said P1 may not be complementary to the corresponding nucleotide of said target polynucleotide, and wherein such contacting occurs under conditions that promote hybridization between the first and second portions thereby forming an P1-TP complex;

(b) contacting the P1-TP complex of (a) with an exonuclease deficient deoxyribonucleotide (DNA) polymerase enzyme under conditions that promote extension of the P1 with the TP as template thereby forming an extended segment (ES) of P1;

(c) detecting the extended P1 by removing the target polynucleotide from the complex formed in step (b) and contacting a primer oligonucleotide (P2) with the extended P1, wherein P2 comprises a portion that hybridizes to the extended segment

of P1 and not to the non-extended portion of P1 under conditions promoting such hybridization; and

(d) detecting said hybridization of P2 and extended P1;

whereby said hybridization indicates extension of P1 thereby detecting an SNP in the target polynucleotide.

2. (Once Amended) A process for detecting the hybridization of P2 and extended P1 in the process of claim 1 comprising the steps of:

A2  
CDU't. (a) contacting an amplification target circle (ATC) with the hybridized P2 and extended P1 of claim 1 wherein said P2 comprises a first portion that hybridizes to the extended segment of P1 and not to the non-extended portion of P1 and a second portion that hybridizes to said ATC but not to P1, wherein P2 is a bipolar oligonucleotide and under conditions promoting hybridization of the ATC to P2 to form hybridized ATC-P2;

(b) contacting said hybridized ATC-P2 with a DNA polymerase under conditions promoting extension of P2 to produce rolling circle amplification of said ATC and thereby generating tandem sequence DNA (TS-DNA); and

(c) detecting production of said TS-DNA thereby detecting hybridization of P2 and extended P1.

3. (Once Amended) The process of claim 2 wherein P2 comprises two 3'-ends.

4. (Once Amended) The process of claim 2 wherein the target polynucleotide is derived from genomic DNA.

7. (Once Amended) The process of claim 4 wherein the target polynucleotide is a mixture of human and non-human genomic DNA.

A3 8. (Once Amended) The process of claim 2 wherein the DNA polymerase of step (b) is an enzyme selected from the group consisting of bacteriophage  $\phi$ 29 DNA polymerase, phage M2 DNA polymerase, phage  $\phi$ -PRD1 DNA polymerase, VENT<sup>®</sup> DNA polymerase, Klenow fragment of DNA polymerase I, T5 DNA polymerase, PRD1 DNA polymerase, T4 DNA polymerase, *E. coli* DNA polymerase III holoenzyme, Tts polymerase and T7 DNA polymerase.

A4 10. (Once Amended) The process of claim 2 wherein the DNA polymerase of step (b) is exonuclease deficient.

Please add the following new claim:

31. (New) A process for detecting a single nucleotide polymorphism (SNP) in a target polynucleotide, comprising:

A5 (a) contacting one or more allele specific oligonucleotide primers (P1) with one or more target polynucleotides (TP), wherein said target polynucleotide possesses a first portion that is complementary to a second portion located on said P1 at or near one end thereof but wherein the terminal nucleotide, and third nucleotide from the terminal nucleotide, at said end of said P1 may not be complementary to the corresponding nucleotide of said target polynucleotide, and wherein such contacting occurs under conditions that promote hybridization between the first and second portions thereby forming an P1-TP complex and wherein P1 comprises the nucleotide sequence of SEQ ID NO: 13;